



TORQ Analysis of Industrial Machinery Mechanics to Helpers--Installation, Maintenance, and Repair Workers

INPUT SECTION:

Transfer	Title	O*NET	Filters		
From Title:	Industrial Machinery Mechanics	49-9041.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Helpers--Installation, Maintenance, and Repair Workers	49-9098.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

OUTPUT SECTION:

Grand TORQ:

91

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	87	Level	89	Level	96

Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt
Extent Flexibility	64	13	65	Operation Monitoring	69	4	72	No Knowledge Upgrades Required!			
Flexibility of Closure	51	10	59	Critical Thinking	59	2	73				
Stamina	42	8	53								
Category Flexibility	48	7	56								
Oral Comprehension	55	5	68								
Dynamic Strength	41	6	53								
Static Strength	55	5	62								
Trunk Strength	51	5	62								
Gross Body Coordination	42	5	50								
Far Vision	48	4	62								
Oral Expression	48	4	59								
Speech Recognition	41	4	59								
Arm-Hand Steadiness	50	2	75								
Depth Perception	44	2	53								
Gross Body Equilibrium	35	1	59								

LEVEL and IMPT (IMPORTANCE) refer to the Target Helpers--Installation, Maintenance, and Repair Workers. GAP refers to level difference between Industrial Machinery Mechanics and Helpers--Installation, Maintenance, and Repair Workers.

ASK ANALYSIS

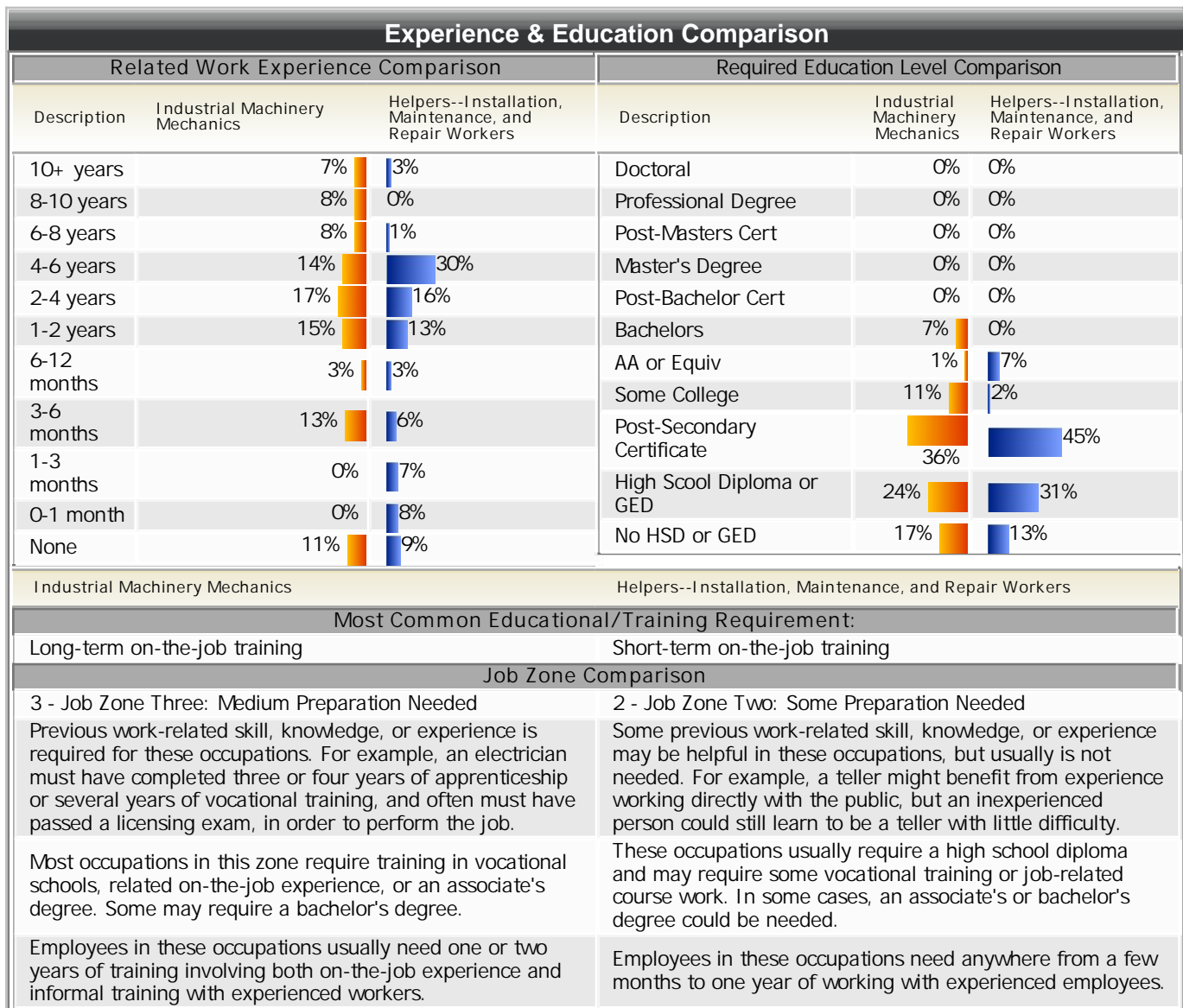
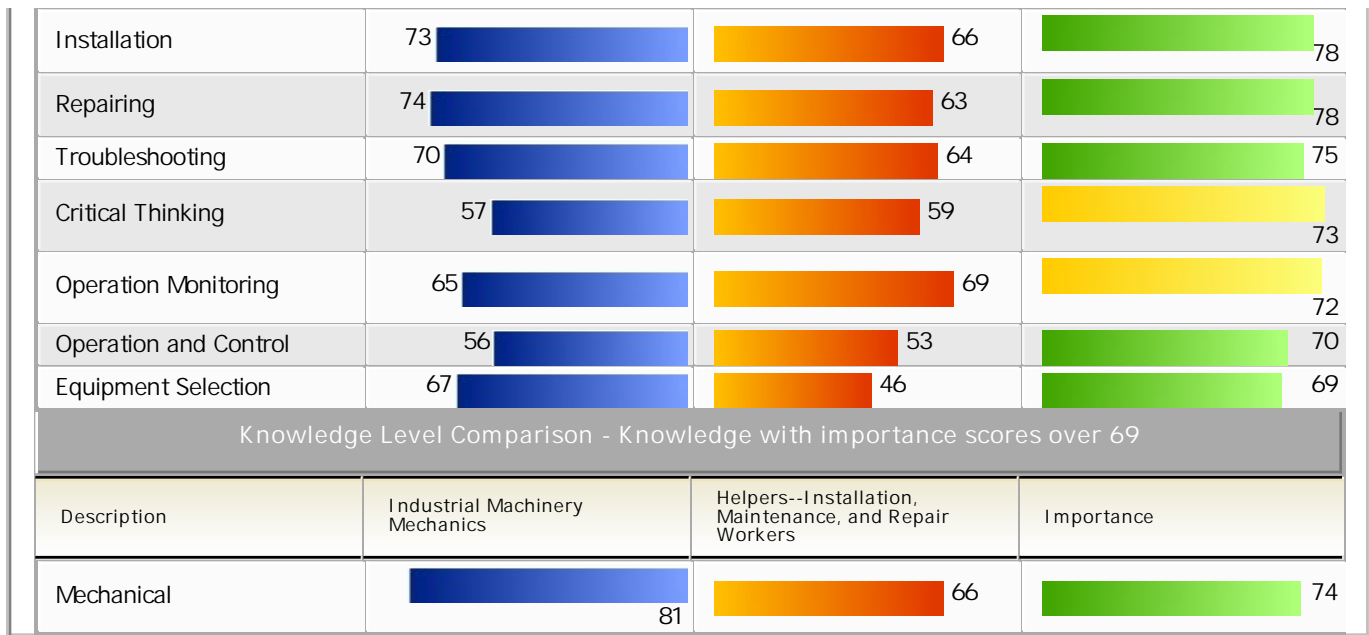
Ability Level Comparison - Abilities with importance scores over 50



Description	Industrial Machinery Mechanics	Helpers--Installation, Maintenance, and Repair Workers	Importance
Arm-Hand Steadiness	48	50	75
Problem Sensitivity	44	42	72
Near Vision	50	50	72
Oral Comprehension	50	55	68
Inductive Reasoning	42	42	65
Information Ordering	53	46	65
Extent Flexibility	51	64	65
Finger Dexterity	51	48	62
Control Precision	55	50	62
Static Strength	50	55	62
Trunk Strength	46	51	62
Far Vision	44	48	62
Oral Expression	44	48	59
Deductive Reasoning	46	42	59
Flexibility of Closure	41	51	59
Manual Dexterity	53	44	59
Multilimb Coordination	51	41	59
Gross Body Equilibrium	34	35	59
Speech Recognition	37	41	59
Category Flexibility	41	48	56
Selective Attention	50	41	56
Hearing Sensitivity	55	50	56
Written Comprehension	48	39	53
Perceptual Speed	42	41	53
Visualization	51	51	53
Dynamic Strength	35	41	53
Stamina	34	42	53
Visual Color Discrimination	53	53	53
Depth Perception	42	44	53
Speech Clarity	39	39	53
Time Sharing	39	34	50
Reaction Time	59	46	50
Gross Body Coordination	37	42	50
Auditory Attention	55	44	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Industrial Machinery Mechanics	Helpers--Installation, Maintenance, and Repair Workers	Importance
Equipment Maintenance	73	64	83
Active Listening	52	45	79





Tasks

Industrial Machinery Mechanics

Core Tasks

Generalized Work Activities:

- Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.

Specific Tasks

Occupation Specific Tasks:

- Analyze test results, machine error messages, and information obtained from operators in order to diagnose equipment problems.
- Clean, lubricate, and adjust parts, equipment, and machinery.
- Cut and weld metal to repair broken metal parts, fabricate new parts, and assemble new equipment.
- Demonstrate equipment functions and features to machine operators.
- Disassemble machinery and equipment to remove parts and make repairs.
- Enter codes and instructions to program computer-controlled machinery.
- Examine parts for defects such as breakage and excessive wear.
- Observe and test the operation of machinery and equipment in order to diagnose malfunctions, using voltmeters and other testing devices.
- Operate newly repaired machinery and equipment to verify the adequacy of repairs.
- Reassemble equipment after completion of inspections, testing, or repairs.
- Record parts and materials used, and order or requisition new parts and materials as necessary.

Helpers--Installation, Maintenance, and Repair Workers

Core Tasks

Generalized Work Activities:

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.
- Monitor Processes, Materials, or Surroundings - Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.
- Evaluating Information to Determine Compliance with Standards - Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.

Specific Tasks

Occupation Specific Tasks:

- Adjust, connect, or disconnect wiring, piping, tubing, and other parts, using hand tools or power tools.
- Apply protective materials to equipment, components, and parts in order to prevent defects and corrosion.
- Assemble and maintain physical structures, using hand tools or power tools.
- Clean or lubricate vehicles, machinery, equipment, instruments, tools, work areas, and other objects, using hand tools, power tools, and cleaning equipment.
- Disassemble broken or defective equipment in order to facilitate repair; reassemble equipment when repairs are complete.
- Examine and test machinery, equipment, components, and parts for defects, and to ensure proper functioning.
- Hold or supply tools, parts, equipment, and supplies for other workers.
- Install or replace machinery, equipment, and new or replacement parts and instruments, using hand tools or power tools.
- Position vehicles, machinery, equipment,



- Record repairs and maintenance performed.
- Repair and maintain the operating condition of industrial production and processing machinery and equipment.
- Repair and replace broken or malfunctioning components of machinery and equipment.
- Study blueprints and manufacturers' manuals to determine correct installation and operation of machinery.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- adjust production equipment/machinery setup
- align or adjust clearances of mechanical components or parts
- analyze operation of malfunctioning electrical or electronic equipment
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- bend tubing or conduit
- braze metal parts or components together
- calibrate or adjust electronic equipment or instruments to specification
- conduct performance testing
- conduct tests to locate mechanical system malfunction
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- determine installation, service, or repair needed
- develop maintenance schedules
- diagnose mechanical problems in machinery or equipment
- fabricate, assemble, or disassemble manufactured products by hand
- identify base metals for welding
- identify properties of metals for repair or fabrication activities
- inspect machinery or equipment to determine adjustments or repairs needed
- install electrical conduit or tubing
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install electronic power, communication, control, or security equipment or systems
- install equipment or attachments on

physical structures, and other objects for assembly or installation, using hand tools, power tools, and moving equipment.

- Prepare work stations so mechanics and repairers can conduct work.
- Provide assistance to more skilled workers involved in the adjustment, maintenance, part replacement, and repair of tools, equipment, and machines.
- Tend and observe equipment and machinery in order to verify efficient and safe operation.
- Transfer tools, parts, equipment, and supplies to and from work stations and other areas.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- apply adhesives, caulking, sealants, or coatings
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- assist mechanic, or extractive or construction trades craft worker
- clean equipment or machinery
- clean rooms or work areas
- construct, erect, or repair wooden frameworks or structures
- fabricate, assemble, or disassemble manufactured products by hand
- inspect machinery or equipment to determine adjustments or repairs needed
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- lubricate machinery, equipment, or parts
- maintain or repair cargo or passenger vehicle
- maintain welding machines or equipment
- move materials or goods between work areas
- move or fit heavy objects
- operate cleaning equipment
- perform safety inspections in industrial, manufacturing or repair setting
- read blueprints
- read work order, instructions, formulas, or processing charts
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace malfunctioning or worn mechanical components



install equipment or attachments on machinery or related structures

- install industrial machinery or related heavy equipment
- install or replace meters, regulators, or related measuring or control devices
- install water or sewer treatment plant equipment
- install/connect electrical equipment to power circuit
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain or repair small engines
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- obtain information from individuals
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- operate pneumatic test equipment
- order or purchase supplies, materials, or equipment
- overhaul industrial or construction machinery or equipment
- overhaul power-generating equipment or machinery
- perform detailed welding techniques
- perform hydraulic plumbing
- perform safety inspections in industrial, manufacturing or repair setting
- position, align, or level machines, equipment, or structures
- program computer numerical controlled machines
- read blueprints
- read schematics
- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair computer controlled manufacturing systems
- repair or adjust measuring or control devices
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace malfunctioning or worn mechanical components
- repair plastics manufacturing equipment
- repair sheet metal products

- replace electronic components
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use basic plumbing techniques
- use hand or power tools
- use knowledge of metric system
- use pneumatic tools

Technology - Examples

Computer aided design CAD software

- Computer aided design CAD software
- HVAC tools software

Data base user interface and query software

- Data logging software

Facilities management software

- Facility energy management software

Industrial control software

- Building automation software

Spreadsheet software

- Microsoft Excel
- Spreadsheet software

Word processing software

- Atlas Construction Business Forms
- Microsoft Word

Tools - Examples

- Adjustable wrenches
- Air compressors
- Bucket trucks
- Backhoes
- Caulking guns
- Boom trucks
- Dollies
- Face masks
- Forklifts
- Front-end loaders
- Safety goggles
- Grease guns



- replace electronic components
- requisition stock, materials, supplies or equipment
- set up and operate variety of machine tools
- set up computer numerical control machines
- solder electrical or electronic connections or components
- solder metal parts or components together
- test electrical/electronic wiring, equipment, systems or fixtures
- test electronic or electrical circuit connections
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use 2-cycle engine technology
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic plumbing techniques
- use braze-welding equipment
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use electronic calibration devices
- use hand or power tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use pipe fitting equipment
- use pneumatic tools
- use pollution control techniques
- use precision measuring devices in mechanical repair work
- use pressure gauges
- use robotics systems technology
- use soldering equipment
- use tube bending equipment
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Computer aided design CAD software

- Computer aided design CAD software

Computer aided manufacturing CAM software

- Extranet Machine Tools Suite

Data base user interface and query software

- Claw hammers
- Hand trucks
- Chain hoists
- Ladders
- Automatic levels
- Locking pliers
- Mallets
- Bosun chairs
- Notebook computers
- Paint application brushes
- Paint application rollers
- Personal computers
- Pipe cutters
- Pipe wrenches
- Pneumatic drills
- Air chisels
- Sandblasters
- Computerized meter readers
- Power chippers
- Power drills
- Power grinders
- Power nailers
- Power sanders
- Power saws
- Steam cleaners
- Safety gloves
- Ratchets
- Scaffolding
- Phillips head screwdrivers
- Skip loaders
- Wire strippers
- Pipe threading machines
- Torque wrenches



- Maintenance planning and control software

Facilities management software

- Maintenance management software

Industrial control software

- BIT Corp ProMACS PLC

- KEYENCE PLC Ladder Logic

Office suite software

- Microsoft Office

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Pliers

- Wrenches

- Compressors

- Alignment tools

- Ammeters

- Stud drivers

- Bandsaws

- Vises

- Block and tackle equipment

- Acetylene torches

- Boring machines

- Broaching machines

- Calipers

- Reciprocating machinery combustion analyzers

- Airhammer chisels

- Combination wrenches

- Cutting dies

- Desktop computers

- Equipment rollers

- Side cutting pliers

- Angled feeler gauges

- Crimping tools

- Utility knives

- Vacuum pumps

- Welding equipment

- Wire cutters

- Overhead cranes

- Drill presses



- Files
- Flow meters
- Forklifts
- Brazing equipment
- Shaping machines
- Grease guns
- Lapping wheels
- Brass hammers
- Hand pumps
- Gauges
- Allen wrenches
- Chain falls
- Impact wrenches
- Bearing heating ovens
- Jacks
- Ladders
- Laser measuring equipment
- Computer printers
- Engine lathes
- Transits
- Level gauges
- Channel lock pliers
- Magnetic retrievers
- Alignment scopes
- Rubber mallets
- Metal inert gas MIG welders
- Punches
- Programmable logic controllers PLC
- Inside micrometers
- Cutting machines
- Milling machines
- Multimeters



- Needlenose pliers
- Oscilloscopes
- Personal computers
- Facing machines
- Pipe wrenches
- Screw pitch gauges
- Plasma cutters
- Staging platforms
- Plumb bobs
- Airpowered descaling drills
- Pneumatic hammers
- Airpowered descaling turbines
- Jigs
- Power drills
- Cylindrical grinders
- Sanders
- Power saws
- Steam cleaning equipment
- Pressure gauges
- Hydrostatic testers
- Optical measuring equipment
- Pinchbars
- Hydraulic pullers
- Putty knives
- Ratchet sets
- Reamers
- Burnishing wheels
- Riveting machines
- Rulers
- Welding lenses
- Handsaws
- Scissor lifts



- Scrapers
- Phillips head screwdrivers
- Rigging
- Socket sets
- Soldering irons
- Cylindrical procedures squares
- Straightedges
- Bearing bridge gauges
- Vacuum lifts
- Strobe tachometers
- Tape measures
- Taps
- Space gauges
- Pipe threaders
- Aviation snips
- Emery wheels
- Tungsten inert gas TIG welding equipment
- Radial drills
- Utility knives
- Vacuum gauges
- Vibration analyzers
- Voltmeters
- Steel wedges
- Arc welders
- Welding shields
- Robotic teach pendants
- Tip dressing machines
- Electric welding equipment
- Electric rotary wire brushes
- Wire cutters
- Cranes
- Drill presses



Labor Market Comparison

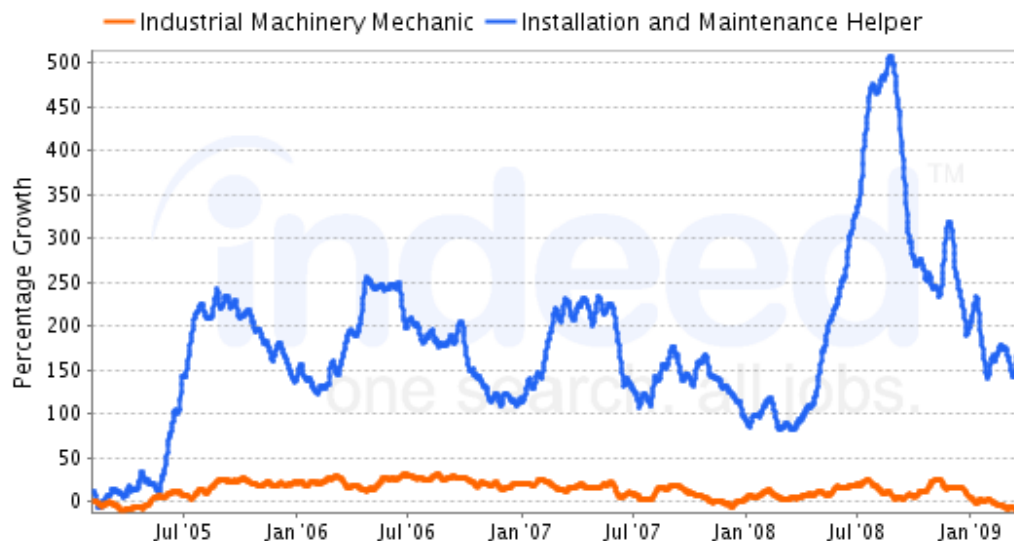
Description	Industrial Machinery Mechanics	Helpers--Installation, Maintenance, and Repair Workers	Difference
Median Wage	\$ 39,370	\$ 20,870	\$(18,500)
10th Percentile Wage	\$ 28,150	\$ 14,890	\$(13,260)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 48,040	\$ 26,650	\$(21,390)
90th Percentile Wage	\$ 56,740	\$ 32,100	\$(24,640)
Mean Wage	\$ 40,830	\$ 22,070	\$(18,760)
Total Employment - 2007	990	590	-400
Employment Base - 2006	1,021	567	-454
Projected Employment - 2016	1,096	616	-480
Projected Job Growth - 2006-2016	7.4 %	8.6 %	1.3 %
Projected Annual Openings - 2006-2016	25	18	-7

National Job Posting Trends

Trend for Industrial Machinery Mechanics

Trend for
Helpers--Installation,
Maintenance, and
Repair Workers

Job Trends from Indeed.com

Data from [Indeed](http://Indeed.com)



Recommended Programs

Building/Property Main. and Manager

Building/Property Maintenance and Management. A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings and mobile homes. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.

No schools available for the program

Industrial Mechanics and Maintenance Technology

Industrial Mechanics and Maintenance Technology. A program that prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Institution	Address	City	URL
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu

Miscellaneous Mechanics and Repairers, Other

Precision Systems Maintenance and Repair Technologies, Other. Any instructional program in miscellaneous mechanics and repairers not listed above.

No schools available for the program

Maine Statewide Promotion Opportunities for Industrial Machinery Mechanics

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings
49-9041.00	Industrial Machinery Mechanics	100	3	990	\$39,370.00	\$0.00	7%	25
49-9044.00	Millwrights	92	3	830	\$41,280.00	\$1,910.00	-12%	11
51-4111.00	Tool and Die Makers	88	3	160	\$51,670.00	\$12,300.00	-11%	2
51-4041.00	Machinists	87	3	1,860	\$41,560.00	\$2,190.00	4%	35
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	87	3	440	\$49,450.00	\$10,080.00	-19%	15
51-4192.00	Lay-Out Workers, Metal and Plastic	86	2	180	\$43,870.00	\$4,500.00	-24%	3
51-4011.00	Computer-Controlled Machine Tool Operators, Metal and Plastic	86	2	720	\$40,490.00	\$1,120.00	6%	12
47-4021.00	Elevator Installers and Repairers	85	4	0	\$50,960.00	\$11,590.00	0%	0
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	85	5	20	\$60,790.00	\$21,420.00	5%	1
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	85	3	170	\$47,860.00	\$8,490.00	-9%	3
49-3011.00	Aircraft Mechanics and Service Technicians	84	3	210	\$44,280.00	\$4,910.00	-2%	2



53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	83	3	60	\$42,890.00	\$3,520.00	5%	2
47-2111.00	Electricians	82	3	2,910	\$43,650.00	\$4,280.00	1%	89
53-7021.00	Crane and Tower Operators	81	3	240	\$41,940.00	\$2,570.00	-2%	4
17-3023.01	Electronics Engineering Technicians	81	3	430	\$45,180.00	\$5,810.00	-20%	9

Top Industries for Helpers--Installation, Maintenance, and Repair Workers

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Automobile dealers	441100	9.46%	15,458	17,535	13.44%
Plumbing, heating, and air-conditioning contractors	238220	9.34%	15,266	17,240	12.93%
Local government, excluding education and hospitals	939300	7.79%	12,727	14,297	12.34%
Automotive mechanical and electrical repair and maintenance	811110	6.68%	10,913	12,957	18.73%
Automotive body, paint, interior, and glass repair	811120	4.74%	7,742	9,039	16.76%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	2.60%	4,252	4,500	5.82%
Electrical contractors	238210	2.56%	4,179	4,382	4.86%
Electric power generation, transmission and distribution	221100	2.22%	3,632	3,340	-8.03%
Activities related to real estate	531300	2.17%	3,553	4,527	27.44%
Lessors of real estate	531100	2.06%	3,372	3,716	10.18%
Other motor vehicle dealers	441200	1.62%	2,649	3,550	34.01%
Power and communication line and related structures construction	237130	1.54%	2,517	2,648	5.20%
General freight trucking	484100	1.37%	2,243	2,537	13.11%
Colleges, universities, and professional schools, public and private	611300	1.28%	2,098	2,347	11.87%
Automotive parts, accessories, and tire stores	441300	1.18%	1,931	1,884	-2.44%

Top Industries for Industrial Machinery Mechanics

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	7.91%	20,611	25,083	21.70%
Motor vehicle parts manufacturing	336300	3.70%	9,644	8,829	-8.44%
Plastics product manufacturing	326100	3.58%	9,327	11,369	21.90%
Self-employed workers, primary job	000601	2.49%	6,497	7,960	22.52%



Electric power generation, transmission and distribution	221100	2.40%	6,265	6,626	5.77%
Converted paper product manufacturing	322200	2.30%	5,998	5,789	-3.49%
Pulp, paper, and paperboard mills	322100	2.25%	5,865	4,678	-20.23%
Animal slaughtering and processing	311600	2.25%	5,866	7,700	31.25%
Local government, excluding education and hospitals	939300	2.03%	5,296	6,841	29.19%
Fruit and vegetable preserving and specialty food manufacturing	311400	2.02%	5,259	5,484	4.27%
Basic chemical manufacturing	325100	1.87%	4,881	4,734	-3.02%
Federal government, excluding postal service	919999	1.81%	4,706	5,116	8.71%
Petroleum and coal products manufacturing	324100	1.46%	3,797	3,296	-13.18%
Semiconductor and other electronic component manufacturing	334400	1.39%	3,633	3,652	0.52%
Bakeries and tortilla manufacturing	311800	1.36%	3,536	4,154	17.47%